

Biotemplated Nano-Structured Materials for Advanced Li-ion Batteries, Phase I

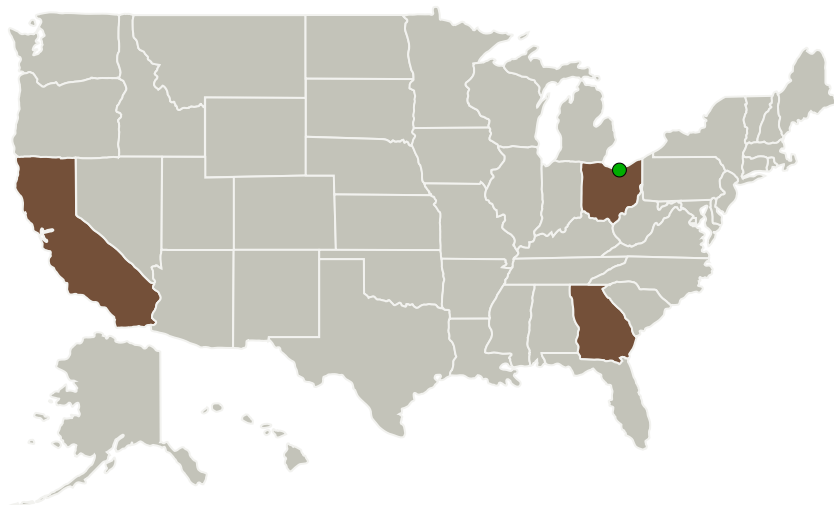
Completed Technology Project (2010 - 2011)



Project Introduction

NASA has identified a critical need for pioneering advances in battery technology to give high performance, low-weight, durable and long-life power sources for future missions. In this Phase I proposal, CFX Battery, Inc. and Georgia Institute of Technology propose the chemical conversion of micron-sized, nano-structured templates available from renewable resources into functional electrode materials. In nature, diatom species form complex cell wall structures made of silica through biological self-assembly. We will take advantage of these intricate structures to generate hierarchically-ordered functional nanocrystalline oxide architectures, and investigate the application of these materials in electrochemical devices. We intend to establish that electrodes fabricated from these nanostructures are innovative materials that display improved electrochemical performance compared to traditional electrodes. This will enable us to address the significant increases in energy capacity, power capability and cycling stability necessary to meet the NASA requirements for advanced Li-ion battery technology. Our manufacturing strategy is conceptually-straightforward, rapid, scalable and amenable to commercialization.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
CFX Battery, Inc.	Lead Organization	Industry	Azusa, California
Georgia Institute of Technology-Main Campus(GA Tech)	Supporting Organization	Academia	Atlanta, Georgia
● Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations

California	Georgia
Ohio	

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

CFX Battery, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

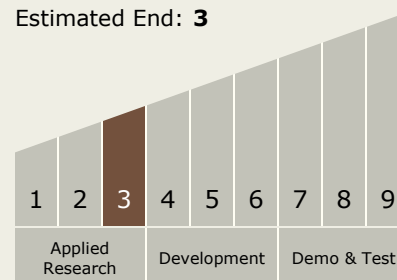
Principal Investigator:

Simon C Jones

Technology Maturity (TRL)

Current: 3

Estimated End: 3



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Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
 - └ TX03.2 Energy Storage
 - └ TX03.2.1 Electrochemical: Batteries

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System